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ABSTRACT

This report discusses a working group convened in Varna, Bulgaria, by the World Health Organization to examine trends, issues, and problems regarding assessment of health professional competence and to prepare guidance to improve existing arrangements. Following a summary of the proceedings, the main portion of the paper reports main findings and recommendations of the group on three topics. First, a set of principles are set forth that were developed to guide the development of assessment systems. Seven principles deal with the function and content of assessment. Eight principles are also presented that should guide educational institutions in the organization, structure, and methods of assessment. Next, four implications are discussed for application of the principles with regard to the use of different assessment methods. Finally, strategies are suggested for implementing those procedures. Some recommendations are then summarized, including reduced emphasis on assessment of factual knowledge, evaluation of performance in real life settings, diagnostic evaluation instead of pass/fail examinations, encouragement of developmental research in assessment of health care professionals by member states, facilitation of implementation of recommendations by member states, and provision of appropriate facilities for the educational development of staff by member states. (YLB)

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THE ASSESSMENT OF COMPETENCE OF STUDENTS IN THE HEALTH FIELD

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Report on a Working Group

Varna, Bulgaria
23–26 September 1980

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1. Introduction

It is generally recognized that educational assessments, i.e. the procedures used to examine students, have considerable influence on how and what students learn. Examinations indicate to students what they are expected to have learned or what skills and attitudes they must demonstrate during and at the end of their training.

Assessments also provide essential diagnostic information to students and teachers as to how effectively learning and teaching are progressing, and hence permit remedial action to be taken by teachers and learners. Assessments further permit the necessary check that the prospective physician, nurse or other health worker can be entrusted to carry out specified health care activities. Given the importance of educational assessment it is essential that the methodology of assessment is appropriate, and that what is assessed are those abilities which are really relevant to the performance of a health professional. It is also important that the assessments are effective and efficient, and that the information gained from them is valid and reliable.

In the last decades, considerable research efforts have been expended to advance our theoretical understanding of assessment. Unfortunately, the application of the expanding theory has been less than spectacular. In many educational programmes the assessment procedures, far from supporting the objectives of the training, actually hinder or obstruct its realization; too often the assessment system provides neither students, teachers nor administrators with information on which important decisions can justifiably be made. Hence, the purpose of the present Working Group was to indicate what action might be taken by Member States to improve assessment arrangements. As such, the Group formed part of a series of efforts by WHO and its Regional Office for Europe to collaborate with Member States in improving health manpower development. It formed one of a series of interrelated activities undertaken by WHO.

The Working Group was convened by the WHO Regional Office for Europe in conjunction with the Government of Bulgaria. It was attended by 19 temporary advisers from 14 European countries, together with 2 WHO staff members (see Annex). Professor K.G. Gargov was elected as Chairman and Dr R.E. Wakeford as Rapporteur.

2. Objectives of the Working Group

The overall purpose of the Working Group was to examine trends, issues and problems in relation to the assessment of health professional competence at all stages of training, and to prepare guidance for Member States and the Regional Office as to actions to improve existing arrangements. The Group was asked specifically:

(a) to identify principles which should guide the selection and implementation of procedures for assessing the ability of student health professionals to perform specified tasks, which should at the same time provide guidance and feedback to staff and students;

(b) to suggest actions to be taken by educational institutions and teachers in order to apply such procedures, and to recommend supportive actions which might be taken by national and regional authorities and WHO;

(c) to review the obstacles likely to hinder these developments, and ways of overcoming them.

3. Proceedings

The Working Group met continuously over a four-day period, in both plenary and small-group sessions. Following the official opening and welcome, the meeting commenced with an informal review of assessment practices throughout the European Region, together with a discussion of associated difficulties and problems. Each member of the Group made a short statement concerning the issues and developments in his or her own country, and documentation was issued on the arrangements in the German Democratic Republic, the Federal Republic of Germany, Poland, Switzerland, the United Kingdom and the USSR.

This review demonstrated that some developments are taking place in student assessment in health care training institutions in Europe, of which the following are examples:

- increasing use of a greater variety of assessment methods;
- greater interest in the use of non-traditional assessment techniques (e.g. patient management problems, observational techniques);

- a broadening view of what constitutes assessment (e.g. informal assessment, self-assessment, comments from patients);
- a growing number of assessments within courses, rather than just at the end of courses.

The Group believed that such trends indicate a general wish to improve assessment in the training programmes for health care professionals throughout Europe. Nevertheless, there was also universal concern within the Group that there is room for great improvement. The participants were unanimously of the opinion that assessments in educational institutions at present tend to concentrate too much on the recall of factual knowledge. Whilst a body of factual data is of course necessary to a doctor, nurse or other provider of health care, factual knowledge is only one of the prerequisites to the successful performance of his or her professional duties. Other vital attributes include an ability to generate and test hypotheses, psychomotor skills, skills relating to interpersonal communication, and professional attitudes.

The total performance of a health professional is something more than the sum of the more easily measurable of its components, yet assessments almost invariably focus on the latter. The increasing number of examinations tend to assess the same, often inappropriate, components - repeatedly and unnecessarily.

Thus many currently used assessment procedures are both inappropriate and unreliable, and they lead to inappropriate student learning strategies. Often, over-large student numbers exacerbate the situation. Assessment ought to form an appropriate and component part of the teaching/learning process.

Unfortunately, insufficient data exist about alternative assessment methods, even given the will to develop and innovate, which is often absent - in part due to the low priority generally given to "staff development" and expertise in pedagogy. Certainly the Group found that great difficulties are generally being experienced in attempts to introduce more valid and reliable procedures.

In the remainder of the time available to it, the Group developed a set of principles to guide the development of assessment systems, presented implications for application of the principles with regard to the use of different assessment methods, and suggested strategies for implementing those procedures. These topics are discussed in the next three sections of this report.

The report does not attempt to emulate a research paper, with many references, or a textbook - of which some excellent ones are available on the assessment of students.[a] It reports the main findings and recommendations of the Group in a straightforward manner: it is hoped that in this way it may be of the most practical value to its intended readers.

4. Principles to guide the development of an assessment system

The Working Group considered that there is, in general, a mis-match between the behaviour expected of health care professionals and many current systems of assessment. What is assessed in training bears little relationship to the "real life" of the trained health professional. A number of factors contribute to this. The use of certain assessment methodologies - especially multiple-choice questions - encourages a reductionist attitude and approach; minutiae are examined, with little or no regard to the "whole", which is of far greater importance than the sum of its parts. The nurse, physician or other health worker is required to solve a total problem, whether of an individual or a community. Reductionist assessment is likely also to be harmful to the educational process, by encouraging students to concentrate upon details and "small print", to the detriment of broader issues.

A good individual assessment procedure should of course be valid and reliable. The Group noted the many attempts made over recent years to improve assessment procedures, most of which have been concerned with reliability. It felt, however, that the more important of the two aspects is validity, in terms of whether the assessment tests appropriate attributes in the student, and that this aspect should receive more attention. One cannot, for example, test a student's ability to examine patients and to communicate with them using a system composed solely of written tests, however reliable these may be devised.

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[a] The reader is directed to the WHO publication: Katz, F.M. and Fülöp, F. Personnel for health care: case studies for educational programmes. Geneva, World Health Organization, 1978 (Public Health Papers, No. 70).

The second cause of mis-match is a frequently traditional assessment design, in content as well as form, which ignores crucial areas of performance: how often, for instance, is a medical student's ability to write succinct, readable, well-organized case-notes measured? The careful assessment of service needs and demands, as well as observation and analysis of the present performance of health professionals should therefore be a prerequisite to the design and introduction of valid assessment procedures.

Thirdly, assessment as practised is almost always concerned with a student's "having" knowledge: there is little emphasis on them as "doers" of tasks. The Group thus believed that more emphasis needs to be placed upon what students actually do - how they perform as trainee health professionals in the working situation.

Finally, it was felt that the attempts during recent years to develop "exact" systems of educational assessment have often led to less valid - if more exact - ones. All assessment is, in the end, conducted upon the basis of subjective judgements, and this must be recognized. A computerized assessment system may be fair to all examination candidates, but if it is inappropriate and invalid it is still as bad as the system which it replaces. Thus "soft" data should not be spurned as having no value in a system of student assessment: all data should be scrutinized for their ability to describe, explain and illuminate.

An appropriate assessment system would therefore concentrate much more upon the trainees' performance in "real life", rather than in artificial and possibly irrelevant examinations. In addition to the reasons put forward above, there is evidence that students' actual performance is quite different from that in examination settings.

Any student assessment system must be planned as an integral, component part of a institution's total educational programme. Thus, assessment procedures can only be planned and administered in association with a consideration of the institution's overall aims, teaching methods and learning objectives. (Irrespective of the merits of comprehensive learning objectives, the Group did not consider it essential for this purpose to describe them in detail.) The various factors operating upon the curriculum as a whole - such as national plans or directives - will naturally affect an institution's choice of assessment methods; however, as great a consideration as possible should be placed upon the future function of the trainee when selecting forms of assessment. In this regard, the development of tests which relate to student performance according to specified criteria is considered essential: arbitrary "pass-marks" such as 50% should not figure in assessment for the health care professions.

A system of student assessment should be seen as part of a broader system of evaluation - including assessment of the educational programme and its teachers, as well as the students. The student assessment system should thus be designed to contribute to the provision of data for educational planning and development in both the short and the long term.

As a result of these considerations and much discussion, the following principles were enunciated.

Function and content of assessment

1. Assessment should not emphasize the recall of factual knowledge. It should be centred upon the application of knowledge and skills, and should include the assessment of professional attitudes. It should concentrate on the performance of tasks, from the complex, as in clinical problem-solving, to the more simple.

2. The principle that "students need to know facts before they can solve problems" is, when carried to excess, counter-educational. From the very start of training, assessment should therefore concentrate upon students' problem-solving and decision-making abilities.

3. Assessment questions should not regularly be concerned with the occasional and the bizarre: they should for the most part reflect the problems likely to be encountered in future practice and should thus, as far as possible, be closely related to the real life situation in the relevant profession.

4. Assessment should, however, examine (though not exclusively) performance in those aspects of the job regarded as critical to patient care (e.g. life-threatening situations). Such crucial assessments should, where possible, be of more than one sort.

5. The Group reaffirmed the need for assessment of two types: the first, so-called summative assessment, allowing pass/fail (or possibly pass/fail/distinction) decisions to be made about individual students; and the second, often called formative assessment, being principally concerned with the provision of diagnostic feedback to students to guide them in their studies. Although on occasion the same test might fulfil both functions, the Group felt that it is important for educational institutions to bear in mind the two basic reasons for assessment when designing their own curricula and examination programmes.

6. As part of the procedures for feedback to students, facilities for self-administered tests should be developed. Students should be encouraged to make use of these in groups (as well as individually).

7. The function and detailed nature of the assessment system should always be made explicit to students. Assessment should be preceded by a clear statement of what is expected of the learner.

Principles concerning the organization, structure and methods of assessment

A number of principles were agreed which it was felt should guide educational institutions in organizing student assessment and selecting appropriate forms.

1. The assessment system should be planned and organized as a whole, with the function of each part clearly specified.

2. Assessments should when possible be conducted within real-life professional working situations.

3. Continuing, informal assessment by tutors is regarded as essential, particularly in assisting with the development of students' skills (physical and interpersonal) and attitudes.

4. Nevertheless, in the planning of the curriculum and assessment system as a whole, care should be taken lest assessment interferes unduly with student learning. Rather it should be devised and planned to encourage students in appropriate learning activities.

5. Student assessment should not generally be carried out by individual departments. Examinations should be interdisciplinary in nature - as is real life.

6. Assessment should utilize data from all relevant sources, making use, for example, of carefully solicited information from patients, colleagues and other health professionals.

7. Formative assessment should be arranged so as to give rapid feedback to teachers as well as learners, in order to permit changes in the continuing teaching provided. The data from summative evaluations should also be provided to teachers as rapidly as possible.

8. Assessment arrangements should be regularly reviewed and evaluated. The following questions should be asked, with reference to the system as a whole, at each component part:

(a) Is it valid? Are the tasks which candidates are being asked to perform a sensible and comprehensive sample, bearing in mind the ultimate function of the trainee?

(b) Is it consistent and reliable? Do different examiners give similar ratings, judgements or scores?

(c) Is the testing method appropriate to the task being tested?

5. Application of principles

Application of the principles outlined will clearly have many specific implications for institutions' assessment systems. They will, however, have four general implications.

First, they suggest that all educational institutions[a] concerned with the education and training of students destined to become members of the health care professions re-examine their

[a] These include: medical schools; university faculties which conduct part or all of the course leading to medical qualification and/or nursing qualification; postgraduate medical institutes; schools of nursing; and other institutions responsible for the training of health professionals.

assessment programme in the light of the other recommendations which follow. It is, moreover, not possible for sections of institutions providing (when this is the case) separate preliminary training in basic sciences to avoid this responsibility: they, too, are training and assessing future health care professionals.

Second, these principles suggest that institutions will need to examine particularly the type and range of assessment procedures which they use, especially with a view to their validity and appropriateness. An assessment programme has a great bearing on how and what students learn: indeed, it is a major, essential component in the teaching/learning process. If examinations test knowledge, students will store knowledge; if they concentrate upon clinical ability, then it is upon clinical work that students will spend their time. It is therefore vital that the range of assessment procedures used within a course reflects the desired learning behaviour of its students and is directly related to the eventual performance required of the student as a health professional. It also follows that there is no single "ideal" assessment method: a variety of techniques will always be necessary.

Third, the principles will require educational institutions to reduce emphasis on the assessment of factual knowledge throughout the course they offer. From the start of the course, assessment should place emphasis upon testing the range of skills (problem-solving, communication, ability to work with others, etc.) needed for professional performance: this should include the monitoring of professional attitudes. This necessity becomes clear when the range of skills required of a health professional is considered, for example:

- making relevant observations;
- conducting an interview;
- selecting proper sources when gathering data;
- gathering information (also from other health care workers);
- interpretation of data based on scientific theories, concepts and principles;
- indication of the relationship between a patient's problem and his/her sociocultural background;
- avoidance of personal opinions interfering with the interpretation of factual data;
- executing diagnostic and therapeutic procedures;
- tracing the source(s) of the patient's complaints;
- setting priorities in health care work;
- identification of situations of distress, whether overt or concealed.

Wherever possible, assessment should concentrate upon performance in real life settings, and be based upon the observations of a number of "examiners" made over a period of time.

Lastly, the examinations in which a student is "passed" or "failed" should be reduced by the educational institutions to as small a number as possible. In their place, there should be frequent opportunities for "diagnostic" assessment to guide students in their studies: this should include provision for regular self-assessment, as well as assessment by tutors and peers.

6. Strategies for implementation

The Group recognized the difficulties facing many educational institutions surrounding the development of assessment methods and the establishment of new arrangements and techniques. Not only do practices become traditional and time-honoured, thereby acquiring an apparent validity, but national or other regulations may tend to preserve the status quo. This does not remove the duty from educational institutions to strive for excellence - or at least improvement - in their assessment arrangements.

Assessment throughout the curriculum is of critical value not only to the student, but also to curriculum and staff development, to the maintenance of professional standards, and, most important of all, to patients. So while development and change may be difficult, they are important and very worthwhile.

The first obstacle to implementation of the type of assessment system envisaged in this report is a lack of information and data on alternative assessment methods to the traditional. Researchers have spent much time examining traditional techniques (which may, by now, be held to include multiple-choice questions) and discovering their weaknesses. More time needs to be spent upon the development and evaluation of alternatives.

As indicated earlier, assessments tend to concentrate on the readily measurable (e.g. factual knowledge). Many other abilities need to be assessed. Thus Member States should encourage educational institutions and other institutions responsible for educational research to conduct developmental research in the assessment of competence of health care professionals.

Particular emphasis should be placed on devising and evaluating methods to assess the important aspects of professional performance indicated earlier. Their development will have to be based upon systematic evidence of needs and demands as well as on analysis of the respective service areas. WHO should disseminate widely the results of such research and development.

During the Group's discussions, it became evident that many important conditions vary between Member States (e.g. selection arrangements, student members, design of curricular and control mechanisms). The Group believed that each of its recommendations has relevance to every Member State: the nature of their implementation must however be determined by national situations. In some countries, it was felt that regulations would tend to prevent reorganization of student assessment in the manner recommended. Member States are therefore urged to review any national or regional regulations which may prevent educational institutions implementing the recommendations; they are asked to take any necessary steps to facilitate and encourage such implementation.

Another obstacle to change was alluded to in an earlier WHO report:[a] "Within the field of medical education in Europe there are as yet few institutions where sound educational principles and evaluation techniques have been established. Progress in this field is very slow, because there are hardly any faculty staff sufficiently qualified in psychometrics and evaluation methods, but also because these institutions cannot find the time necessary to train the needed experts and at the same time serve medical faculties in the field of educational measurement and conduct research. In fact, although there has been an upsurge in the importance attached to education and training of all categories of health personnel, educational measurement is unfortunately not given the special attention it deserves. Professionals in all walks of life tend to underrate the need to become more familiar with the subjects that concern them. Hence the almost total neglect until very recent times of the discipline of psychometrics and the field of evaluation."

The introduction of effective assessment procedures demands specialized knowledge and considerable effort on the part of teachers: neither of these qualities will generally be found amongst health professional teachers as long as the present unsatisfactory state of affairs continues pertaining to the status afforded to the teaching proficiency (as opposed to expertise in clinical work, research, etc.) of staff. In most countries, it is only at the tertiary level of education (university, other post-school and professional training) where job applicants need often demonstrate neither interest nor ability in teaching.

Member States are therefore asked to provide appropriate facilities for the educational development of staff of all institutions concerned with training in health care, ultimately requiring teaching proficiency in all its aspects to be demonstrated as a job prerequisite. It is important that both teaching and administrative staff have a sound practical knowledge of available assessment techniques and of the educational principles behind them.

With suitably trained staff armed with a range of assessment instruments, a strategy of implementation then needs to be planned: this will depend greatly upon national and local conditions. The Group recommended that such strategies should be multidirectional in approach: they should not depend upon a single tactic succeeding (or failing). Use should be made, where possible, of designated WHO collaborating educational centres for assistance. Within institutions, curriculum committees or their equivalent would be appropriate vehicles for achieving change.

A final spur to implementing the recommendations of the Group would be the wide distribution of this report. It thus requested WHO to determine which bodies in Member States the report (and others) should most expeditiously be sent, with regard to it receiving the widest possible discussion amongst all those groups responsible for organizing and/or controlling education and training for the health professions. In addition to these bodies, the Group asked that WHO send the report to the following:

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[a] Examination and grading of undergraduate and postgraduate medical students: report on a Working Group. Copenhagen, WHO Regional Office for Europe, 1975 (document EURO 6008).

- deans of all European medical schools and institutes of postgraduate medical training;
- members of the advisory board of the Association for Medical Education in Europe;
- directors of all European schools of nursing and institutions for training other health staff;
- directors of university departments of nursing studies;
- relevant national student associations.

It was thought important to examine the effect of the report and its recommendations. WHO was thus further asked, after an appropriate period of time has elapsed, to follow up the report by asking of its recipients what action is occurring or likely to occur as a result.

7. Summary of recommendations

1. All educational institutions concerned with the education and training of students destined to become members of health care professions should re-examine their assessment programme in the light of the further recommendations which follow. Educational institutions should review particularly the validity of their assessment programme as a whole, and also of its components.

2. It is strongly recommended that educational institutions reduce the emphasis on the assessment of factual knowledge throughout the courses they offer. From the start of the course, assessment should place emphasis upon testing the range of skills (problem-solving, communication, ability to work with others, etc.) needed for professional performance: this should include the monitoring of professional attitudes.

3. Wherever possible, assessments should concentrate upon the evaluation of performance in real life settings, based upon the observations of a number of "examiners" made over a period of time.

4. The number of examinations in which a student is "passed" or "failed" should be reduced by the educational institutions to as small a number as possible. In their place there should be frequent opportunities for "diagnostic" evaluation to guide students in their studies: this should include provision for regular self-assessment, as well as assessment by tutors and peers.

5. Member States should encourage educational institutions and other institutions responsible for educational research to conduct developmental research in the assessment of competence of health care professionals. WHO should disseminate widely the results of such research and development.

6. Member States are urged to review any national or regional regulations which may prevent educational institutions implementing the foregoing recommendations; they are asked to take any necessary steps to facilitate and encourage their implementation.

7. Member States are asked to provide appropriate facilities for the educational development of staff of all institutions concerned with training in health care, ultimately requiring teaching proficiency in all its aspects to be demonstrated as a job prerequisite. It is important that both teaching and administrative staff have a sound practical knowledge of available assessment techniques and of the educational principles behind them.

8. WHO should ensure that this report receives wide and appropriate distribution. After an appropriate period of time has elapsed, it should ask the recipients what action is occurring or likely to occur as a result of the report and its recommendations.

The ultimate aim of these recommendations is to encourage educational institutions to develop a learning environment or "milieu" in which the student acquires the will and habit constantly to review his performance against agreed standards or criteria, against his own ideals, and against those of his colleagues. In this way the importance of external assessment will be reduced, thereby encouraging creativity, self-responsibility towards a professional lifetime of learning (and assessment), and educational freedom.

Annex

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